

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/014728

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G03F7/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G03F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | US 2003/174408 A1 (ROSTALSKI HANS-JUERGEN ET AL) 18 September 2003 (2003-09-18) paragraph [0057] | 32,37 |
| X | <p>-----</p> <p>BRUCE SMITH: "Water-based 193nm immersion lithography" [Online] 28 January 2004 (2004-01-28), XP002330079 Retrieved from the Internet: URL: http://www.sematech.org/resources/litho/meetings/immersion/20040128/presentation_s/06%20RIT%20microstepper%20efforts_Smith.pdf [retrieved on 2005-05-30] page 13 - page 14 page 19 page 22</p> <p>-----</p> <p>-/--</p> | 32,33 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

31 May 2005

Date of mailing of the international search report

25. 08. 2005

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| E | WO 2005/006026 A (NIKON RESEARCH CORPORATION OF AMERICA; SOGARD, MICHAEL) 20 January 2005 (2005-01-20) paragraphs [0006], [0009] ----- | 1,3, 34-37 |
| P,X | EP 1 486 827 A (ASML NETHERLANDS B.V) 15 December 2004 (2004-12-15) paragraph [0073] ----- | 33 |
| E | EP 1 522 894 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 13 April 2005 (2005-04-13) paragraph [0070] ----- | 33 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2004/014728

Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-30, 32-37

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-30, 32-37

Prior art (US2003174408): projection exposure apparatus with particular projection lens design for immersion lithography

Special technical features:

immersion liquid enriched with heavy isotopes, immersion liquid supplemented with additives, immersion liquid with refraction index equal to refraction index of last optical element

Problem solved by these special technical features:
chemical reactivity of the immersion liquid

2. claim: 31

Special technical features: particular temperature dependency of the refractive index of the immersion liquid
Problem solved by these special technical features: imaging properties of projection lens are not altered by minor temperature fluctuations of the immersion liquid

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/014728

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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| | | AU 2002312872 A1 | 22-09-2003 |
| | | AU 2003221490 A1 | 22-09-2003 |
| | | WO 03077036 A1 | 18-09-2003 |
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| | | JP 2005005713 A | 06-01-2005 |
| | | US 2005024609 A1 | 03-02-2005 |
| EP 1522894 A | 13-04-2005 | JP 2005136374 A | 26-05-2005 |
| | | CN 1606128 A | 13-04-2005 |
| | | EP 1522894 A2 | 13-04-2005 |
| | | US 2005074704 A1 | 07-04-2005 |